IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Heinrich BOLLMANN et al.	
Serial No.	:	09/456,371	**Group:** 1771
Atty. No	:	12010	**Examiner:** Victor S. Chang
Filed	:	December 8, 1999	
Title	:	Composite Elements Comprising (i) Thermoplastic Polyurethanes and (ii) Microcellular Polyurethane Elastomers	

BRIEF ON APPEAL

Mail Stop Appeal Brief - Patents
Commissioner of Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

In response to the Final Office Action, mailed June 5, 2008, and subsequent to the filing of the Notice of Appeal on September 5, 2008, Applicant now submits a brief in support of the appeal with an appropriate petition for an extension of time. Only a single copy of this Appeal Brief is being submitted in accordance with 37 C.F.R. §41.37. The required fee under §41.20(b)(2) has previously been partially paid and the remainder is submitted herewith.

As set forth in MPEP 1204.01 and in compliance with 37 CFR 41.20, any previously paid fees submitted with an appeal brief will be applied to the new appeal brief on the same application as long as a final Board decision has not been made on the prior appeal.

Currently, the fee associated with a filing an Appeal Brief is $540.00. On December 23, 2004, Applicant filed an Appeal Brief with the fee of $500.00. On

August 25, 2005 the Applicant filed a Request for Continued Examination (RCE) and voluntarily dismissed the pending appeal. Subsequently, Applicant filed a second Appeal Brief on August 27, 2007, but no additional fee was due. The Examiner reopened prosecution due to an Examiner error in the Final Office Action of September 25, 2006 and no final Board decision was rendered.

Since a final Board decision was not made on the prior appeals, Applicant believes that the only fee currently due with the filing of the subject Appeal Brief is $40 and such fee is submitted herewith. However, should a different fee in fact be due, the Commissioner is hereby authorized to charge such fees or credit any overpayments to Deposit Account 08-2789.

Real Party in Interest

The inventors assigned this application to BASF Aktiengesellschaft as evidenced by an assignment recorded at reel 010464, frame 0286.

Related Appeals and Interferences

There are no related appeals or interferences.

Status of Claims

Claims 19, 20, 22, 23, and 30 are on appeal and are attached hereto in the Appendix. Claims 1-18, 21, and 24-29 have been cancelled. Claim 19, 20, 22, 23, and 30 stand finally rejected under 35 U.S.C. §112.

Status of Amendments

All amendments have been entered and are reflected in the claims in the Appendix.

Summary of Claimed Subject Matter

Claim 19 claims a metal vehicle composite damping element received in a transverse link, a longitudinal link, a triangular link, a rear-axle subframe, a stabilizer, a spring-strut support, or a shock-absorber. The composite damping element comprises i) a rigid thermoplastic polyurethane molding and ii) a flexible microcellular polyurethane elastomer layer *(see page 1, lines 5-15 and page 2, lines 13-25 of the originally filed specification)*. The rigid thermoplastic polyurethane molding (i) has a thickness of from 2 to 10 mm. The flexible microcellular polyurethane elastomer layer (ii) is chemically bonded to and in direct contact with at least one surface of the rigid thermoplastic polyurethane molding such that the microcellular polyurethane elastomer layer dampens and absorbs vibrations of the transverse link, the longitudinal link, the triangular link, the rear-axle subframe, the stabilizer, the spring-strut support, or the shock-absorber while supported by the rigid thermoplastic polyurethane molding. *(see page 9, lines 4-15 of the originally filed specification and Figures 1-3)*.

Grounds of Rejection to be Reviewed on Appeal

1) Whether the specification and drawings and claim 23 are properly rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

2) Whether claims 19, 20, 22, 23 and 30 are properly rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

3) Whether claim 23 is properly rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter.

Argument

1) Rejection of specification and drawings and claim 23 under 35 U.S.C. §112

The amended specification and drawings and claim 23 stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. The Examiner contends that the claims contain subject matter not described in the specification in such a way to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention. Specifically, the Examiner contends that the limitation of claim 23, "elastomer layer is bonded to an outer surface of said molding", is not *directly* supported by the original specification and thus, the drawings, amended specification, and this limitation are new matter. The Examiner does not articulate those portions in the amended specification and figures that are rejected other than with reference to the specific element of claim 23.

In accordance with MPEP 2163.06, "...information contained in *any one* of the specification, claims or drawings of the application as filed *may be added to any other part* of the application without introducing new matter" (emphasis added). Further, "[t]he 'written description' requirement implements the principle that a patent must describe the technology that is sought to be patented; the requirement serves both to

satisfy the inventor's obligation to disclose the technologic knowledge upon which the patent is based, and to demonstrate that the patentee was in possession of the invention that is claimed." *Capon v. Eshhar*, 418 F.3d 1349, 1357, 76 USPQ2d 1078, 1084 (Fed. Cir. 2005). To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention. See, e.g., *Moba, B.V. v. Diamond Automation, Inc.*, 325 F.3d 1306, 1319, 66 USPQ2d 1429, 1438 (Fed. Cir. 2003); *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d at 1563, 19 USPQ2d at 1116.

The Examiner, on page 4 of the Final Office Action, states "the core issues are new matter, rejecting new matter under §112, first paragraph is proper". Applicant agrees that new matter when claimed is appropriately rejected under §112, first paragraph, written description requirement. (Applicant submits that no new matter is being claimed.) However, there is no "new matter" paragraph under §112, and "new matter" rejections are based upon the standards defined in relation to the written description paragraph. Therefore, it is not clear what the Examiner intended with the statement.

Referring to MPEP 2163.06(I) Treatment of New Matter, it states:

> If new subject matter is added to the disclosure, whether it be in the abstract, the specification, or the drawings, the examiner should object to the introduction of new matter under 35 U.S.C.132 or 251 as appropriate, and require applicant to cancel the new matter. If new matter is added to the claims, the examiner should reject the claims under 35 U.S.C. 112, first paragraph - written description requirement. *In re Rasmussen*, 650 F.2d 1212, 211 USPQ 323 (CCPA 1981).

The Examiner has not articulated which, if any, portions of the amended specification are rejected or why the support identified by Applicant is not adequate.

The specification was amended to include descriptions of the Figures being added. The Examiner has not addressed any of the stated evidentiary support submitted in the Response filed November 17, 2003 other than to conclusory state that the amendment and Drawings are not supported. ***Interestingly, the same support had previously persuaded the Examiner to enter the Drawings and has not stated why this support is no longer persuasive.*** Only now, after nearly four and half years, does the Examiner contend that the Applicant has not provided any evidentiary support in the "Response to Arguments" section of the current rejection.

To the contrary, the Applicant has repeatedly identified the areas of the specification as originally filed and provided other evidence of what one of ordinary skill in the art would have understood the inventors to have possessed and to have regarded as the invention. However, in the current rejection, the Examiner has not articulated a single deficiency in the evidence previously submitted. Applicant has identified the clear support for the amendments and Drawings, but will again demonstrate to the Examiner how this matter is contained in the original disclosure (which was originally provided to the Examiner in the November 17, 2003 response).

As set forth in MPEP 2164.05(b), the relative skill of those in the art refers to the skill of those in the art in relation to the subject matter to which the claimed invention pertains at the time the application was filed. Where different arts are involved in the invention, the specification is enabling if it enables persons skilled in each art to carry out the aspect of the invention applicable to their specialty. *In re Naquin*, 398 F.2d 863, 866, 158 USPQ 317, 319 (CCPA 1968). The subject invention involves two different arts: 1) motor vehicle composite damping elements and 2) bonding the flexible microcellular polyurethane elastomer layer to rigid thermoplastic

polyurethane molding. The Examiner has never identified define the different arts involved in the subject application or disputed the different arts identified by Applicant.

One of ordinary skill in the art of motor vehicle composite damping elements, as shown by "Fahrwerktechnik: Radaufhangungen", 2nd Edition, ed. Prof. Dipl. –Ing. Jornsen Reimpell, Vogel Buchverlag Wurzburg, ***which is discussed on page 1, lines 23-26, of the specification as originally filed,*** would understand that the inventors were in possession of complex structures forming the damping elements. (An English equivalent is attached as Exhibit A). One of ordinary skill in the art of bonding the flexible microcellular polyurethane elastomer layer to rigid thermoplastic polyurethane molding would understand that the inventors were in possession of chemically bonding to any surface of the rigid thermoplastic polyurethane molding.

The specification as originally filed describes the reaction of the starting components or preparing the flexible microcellular layer takes place **in direct contact with** the TPU molding. The disclosure in the specification as originally filed broadly teaches any orientation or configuration to achieve the reaction occurring in direct contact with the TPU molding. Since one of ordinary skill in the motor vehicle composite damping elements understands the complex structures and one ordinary skill in the bonding arts understands chemically bonding to a surface, the specification as originally filed has support for any orientation, including the elastomer layer boned to an outer or an inner surface of the molding. Additional support can be found at following citations as set forth in the table below. The table includes what is believed to be conveyed to one of ordinary skill in the arts at the time of filing.

Specification[1]	Original Disclosure	Reasonably Conveyed
Page 1, lines 20-34	Composite elements based on metals and rubber, also generally known as rubber-metal composites, are well known. They are widely used, for example in the running gear of road vehicles, and are described, for example, in "Fahrwerktechnik: Radaufhängungen", 2nd edition, ed. Prof. Dipl.-Ing. Jörnsen Reimpell, Vogel Buchverlag Würzburg, in particular on pages 77, 83, 84, 87, 281, 286 and 290. Disadvantages of these composites are the high density of their metal constituents, the relatively short service life of the rubber, and **also loss of adhesion between the rigid and flexible elements of the component.** It is known that this can be improved by using adhesion promoters, which are applied as liquids to the rigid elements and solidify and, where appropriate, have to be reactivated by heating. These procedures for application and reactivation are time-consuming and costly and should therefore be avoided.	Well-known rubber-metal damping elements include a rigid component and a flexible component. **There are issues with loss of adhesion between the rigid and flexible components when formed of rubber and metal.** The rubber component has a relatively short service life. The TPU molding has characteristics similar to the rigid component and the microcellular elastomer layer has characteristics similar to the flexible component.
Page 1, lines 36-37	**It is well known that microcellular polyurethane elastomers can be used as a flexible element replacing the rubber.**	**The claimed microcellular polyurethane elastomer layer replaces the rubber flexible element of the prior art rubber-metal damping elements and as such the TPU molding replaces the metal component.**
Page 4, lines 43-47, Page 5, lines 1-5	The composite elements are preferably produced in molds into	The flexible microcellular polyurethane elastomer

1 As originally filed on December 8, 1999

	which the TPU (i) is preferably placed in the form of a molding. The reaction of the starting components or preparing (ii) takes place in direct contact with (i), so that the reaction of the starting components produces a bond between (i) and (ii). The internal walls of the molds, in particular those which come into contact with the starting components for preparing (ii), may preferably be provided with a conventional mold-release agent. (ii) is particularly preferably prepared in a closed mold, preferably with a degree of compaction of from 1.1 to 8, particularly preferably from 2 to 6.	layer is chemically bonded to and in direct contact with the rigid TPU.
Page 9, lines 4-16	The novel composite elements are preferably used as damping elements in motor vehicle construction, for example in automotive construction as transverse link bearings, rear-axle subframe bearings, stabilizer bearings, longitudinal link bearings, spring-strut support bearings, shock-absorber bearings and/or bearings for triangular links. The novel composite elements, in particular the damping elements, have not only markedly improved adhesion between the thermoplastic polyurethanes (TPUs) (i) and the microcellular polyurethane elastomers (ii) but also improved mechanical properties of (i), in particular in relation to abrasion and tensile strength.	The flexible microcellular polyurethane elastomer layer and the rigid TPU show improved adhesion and mechanical properties comparable to traditional rubber-metal damping elements. The composite element has different configurations/orientations depending upon the particular use and environment of the composite element.
Page 9, lines 22-27	The mixes described in Table 1 were reacted in a reactive extruder using the parameters given in Table 2 to give thermoplastic polyurethanes. This TPU was then used to produce test specimens of	Rigid TPU was formed into test specimens.

	dimensions 120 mm x 30 mm x 5 mm. The properties of the TPUs and, respectively, of the test specimens are given in Table 2.	
Page 10, lines 14-36	The method of producing the composite elements was to place the cleaned specimens individually into a mold and introduce a reaction mixture into the mold. The microcellular polyurethane was produced in direct contact with the TPU. The mold temperature was 60°C. The reaction mixture used to prepare the microcellular polyurethanes was a system as set out in Kunststoffhandbuch, Vol. 7, "Polyurethane", ed. Günter Oertel, 3rd edn., 1993, Carl-Hanser-Verlag, page 428, Example 5. The composite elements produced had densities of 600 g/cm3. They were then annealed for 16 hours at 110°C, and their properties were tested after a further 5 to 21 days. In particular, the ultimate tensile strength of the composite elements and the nature of their fracture were tested. The advance rate in the tensile test was 20 mm/min. The composite elements consisting of two TPU specimens which had been adhesive-bonded by microcellular polyurethane were clamped into the machine via the TPUs in such a way that they could be subjected to tensile and shear stresses until they fractured. For this the TPU specimens were pulled in opposite directions at the stated advance rate. Table 3 gives the properties of the composite elements.	More than one rigid TPU, i.e., specimens, was used to form the test specimens having the microcellular polyurethane produced in direct contact with the TPU. The orientation of the test specimen was such that the TPU specimens could be pulled in opposite directions. The test specimens likely have a different configuration and/or orientation than the well-known rubber-metal damping elements depending upon the particular application.

The Examiner has not responded to or commented on any of the above cited portions in his response as to the insufficiency of these portions to support the limitations of claim 23, the amended specification, or the Figures. The Examiner summarily concludes "Applicants' speculation that one of ordinary skill in the art would find support for the structural elements in claim 23 lacks evidentiary support in the original specification". However, the Examiner does not point to a single portion or identify one reason that the original disclosure cited above does not support the elements of claim 23.

Applicant submits that it is the bonding between the TPU molding and elastomer layer that improves upon the well-known metal-rubber damping elements and, not specifically the orientation of the TPU molding and elastomer layer. The subject application describes test specimens formed to perform the necessary tests. The orientation and configuration of the composite damping elements are dependent upon the particular application. Whichever specific configuration is used, i.e., inner surface of the molding or outer surface of the molding, the claimed flexible microcellular polyurethane elastomer layer is being chemically bonded to and in direct contact with at least one surface of the rigid thermoplastic polyurethane molding and it is believed that this interface is what provides the desired performance of the damping element.

Very few structures exist that only have a single surface, such as a sphere. As such, one of ordinary skill in the art of damping elements at the time of filing would expect the composite damping element, and specifically, the TPU molding, to have at least two surfaces. Since one of ordinary skill in the art would expect the rigid thermoplastic polyurethane molding to comprise multiple surfaces, the subject application reasonably conveyed to the one of ordinary skill in the relevant art that the flexible microcellular polyurethane elastomer layer is bonded to these surfaces.

Applicant has demonstrated that the subject invention was disclosed as a ***replacement*** for well-known metal-rubber damping elements as reflected in the "Fahrwerktechnik: Radaufhangungen", Exhibit A. The Examiner apparently misunderstands the significance of Exhibit A by his statement "since Exhibit A is absent from the original specification, its structural features are new matter".

First, Exhibit A is cited in the specification as originally filed to illustrate numerous examples of prior art damping elements having different orientations and configurations of the rigid metal and flexible rubber that the subject invention sought to replace. Second, Exhibit A illustrates what one of ordinary skill in the art at the time of the invention (as reflected by it being included in the specification as originally filed) would have understood rubber-metal damping elements to include.

One of ordinary skill in the art, upon reviewing Exhibit A in combination with the disclosure of the subject application, would understand that the Applicant invented a replacement for these metal-rubber damping elements. Thus, one of ordinary skill in the art of damping elements would find adequate support for the structural element "elastomer layer is bonded to an outer surface of said molding" of claim 23. All of these well-known metal-rubber damping elements are complex shapes that have more than one surface. Necessarily, these shapes have inner and outer surfaces. Therefore, one of ordinary skill in the relevant art would reasonably understand that the inventors possessed bonding the flexible microcellular polyurethane elastomer layer to the rigid thermoplastic polyurethane molding.

The Examiner does not articulate why one of ordinary skill in the art upon reviewing Exhibit A in combination with the disclosure of the subject application would not have understood that the Applicant invented a replacement for such parts. Instead,

the Examiner merely concludes there is no support for claim 23, the amended specification, and the drawings.

Exhibit A illustrates well-known prior art metal-rubber damping elements. Page 13 illustrates one damping element, shown as a shock-absorber bearing in Figure 1.10, having rubber supported both on an inner face of one metal component and an outer face of another metal component. Referring now to Figure 3.85 on page 205, a transverse link bearing is shown having two rubber parts 4 around a metal inner tube 1. The rubber 4 is vulcanized to and surrounds an outer face of the inner tube 1 and an inner face of the ring 2. With reference to Figure 5.45 on page 369, an eye-type joint for a shock-absorber is shown having rubber surrounding an outer face of a metal tube and adhered to an inner face of a metal plate. Figure 5.46 on page 370 illustrates a pin-type joint that includes rubber on an inner face of one metal plate and an outer face of another metal plate.

Referring now to Figures 1-3, general types of well-known damping elements are illustrated wherein the traditional metal component is replaced with the TPU molding and the rubber component is replaced with the flexible microcellular polyurethane elastomer layer. The inclusion of the citation to Exhibit A demonstrates that the inventors had possession of traditional metal-rubber damping elements and it is clear that one of ordinary skill in the art would have understood that the inventors possessed using the invention as a replacement for well-known rubber-metal damping elements. The above table includes numerous references to replacing the rubber and metal components of the damping elements. The specification as originally filed in combination with what one of ordinary skill in the automotive damping elements and bonding technology would reasonably conclude that there is clear support for Figures 1-3 and as such,

Figure 1-3 are not new matter.

The amended specification merely adds description for Figure 1-3 illustrating a bearing having a molding of thermoplastic polyurethane with a thickness of 2 to 10 mm and a second layer of microcellular polyurethane. The specification as originally filed supports that the subject invention is used as bearings, that the thermoplastic polyurethane has a thickness of 2 to 10 mm, and that there is a second layer of microcellular polyurethane. The Examiner has never articulated any portion of the amended specification that is rejected.

The Examiner does not reject claim 22, which was added in the same amendment as claim 23. For support of claim 22, the Examiner cites to page 10, lines 30-31, of the specification as originally filed and merely concludes that this clearly shows elastomer bonded to an inner surface. Page 10, lines 30-31 is reproduced in full below states:

> tensile test was 20mm/min. The composite elements consisting of two TPU specimens which had been adhesive-bonded by microcellular

Page 10, lines 30-31 from the specification as originally filed.

However, the Examiner fails to cite and/or consider the remainder of the paragraph and fails to view the paragraph as a whole for what the subject invention reasonably conveys to one of ordinary skill in the art. Page 10, line 30 beginning with "The composite" through line 36, which is reproduced below states:

> The composite elements consisting of two TPU specimens which had been adhesive-bonded by microcellular polyurethane were clamped into the machine via the TPs in such a way that they could be subjected to tensile and shear stresses until they fractured. For this the TPU specimens were pulled in opposite directions at the stated advance rate. Table 3 gives the properties of the composite elements.

Page 10, lines 30-36 from the specification as originally filed.

The full passage above does not identify whether the microcellular polyurethane has been bonded to an inside surface or an outside surface. Therefore, Applicant submit that this disclosure is broader than that suggested by the Examiner and the passage provides clear support that the microcellular polyurethane may be bonded to an inner or an outer surface.

Those of ordinary skill in the art, upon reading the subject application, specifically, page 9, lines 4-9, in view of knowledge common to those skilled in the art, as evidenced by "Fahrwerktechnik: Radaufhangungen", Exhibit A, would find adequate support for the structural element "elastomer layer is bonded to an outer surface of said molding" of claim 23. Thus, it is appreciated that those of ordinary skill in the art recognize that the necessary structure, or configuration, to replace any such prior art rubber-metal composites is inherent in the composite damping element of the subject invention. Accordingly, it is believed that the 35 U.S.C. §112, first paragraph rejection of the amended specification, Figures 1-3, and claim 23 should be withdrawn.

2) Rejection of Claims 19, 20 22, 23, and 30

The prior art rubber-metal composite used in the shock-absorber of the motor vehicle has the metal portion supported by a shaft within the shock-absorber and the rubber portion positioned to absorb and dampen vibrations received by the shock-absorber (see Exhibit A). The ***rigid*** thermoplastic polyurethane molding has replaced the metal component and the ***flexible*** microcellular layer has replaced the rubber component. As discussed at length in the specification as originally filed, these prior art rubber-metal composites have disadvantages that include high density of the metal constituents, short service life of the rubber, and loss of adhesion between the rigid

metal and the flexible rubber *(see page 1, lines 20-34 of the originally filed specification recited above)*. The subject invention overcomes these disadvantages.

The difference between a rigid thermoplastic polyurethane molding and a flexible microcellular polyurethane elastomer layer as used in the context of the subject invention are clear to one of ordinary skill in the art. The rigid thermoplastic polyurethane molding is replacing a metal component. The metal component is rigid, even though metal can be liquid if exposed to high enough temperatures as contended by the Examiner. In the prior art, the metal component supports the rubber component. Rubber is well known by those of ordinary skill in the art of damping elements to be flexible, especially in applications that dampen vibrations between two components. The flexible microcellular polyurethane elastomer layer replaces the rubber of the prior art damping elements.

Webster dictionary defines rigid as "very firm rather than pliant in composition or structure: lacking or devoid of flexibility: inflexible in nature" and defines flexible as "characterized by ready capability for modification or change, by plasticity, pliancy, variability, and often by consequent adaptability to new situations".

Applicant submits that the specification, as referenced above in the table, explicitly states the advantage and function of the claimed invention comprising the rigid TPU molding and flexible elastomer. Specifically, the specification as originally filed states, **"It is well known that microcellular polyurethane elastomers can be used as a flexible element replacing the rubber"**. This disclosure supports explicitly that the microcellular polyurethane elastomer is flexible. The specification as originally filed refers to disadvantages of the prior art metal-rubber damping element as "loss of

adhesion between **the rigid and flexible elements** of the component." This disclosure supports explicitly that the metal-rubber damping elements included rigid and flexible elements. The rubber component is the microcellular polyurethane elastomer; hence the rigid component is the TPU molding.

The Examiner is silent as to how this explicit disclosure in the specification as originally filed does not support the flexible and rigid limitations. Since, the flexible microcellular polyurethane elastomer replaces the rubber and the TPU molding replaces the metal, one of ordinary skill in the art would have understood that the inventors had possessed such limitations.

Alternatively, even if the Examiner contends that these terms are not explicitly stated, Applicant argues that these terms would be reasonably conveyed to one of ordinary skill in the art of damping elements and bonding technology based upon the disclosure of the function and advantage of the claimed composite damping elements.

The terms "rigid" and "flexible" are inherent within the description of the subject invention being a replacement for well-known rubber-metal damping elements. As further set forth in MPEP 2163.07(a), by disclosing in a patent application a device that inherently performs a function or has a property, operates according to a theory or has an advantage, a patent application necessarily discloses that function, theory or advantage, even though it says nothing ***explicit*** concerning it. The application may later be amended to recite the function, theory or advantage without introducing prohibited new matter. *In re Reynolds*, 443 F.2d 384, 170 USPQ 94 (CCPA 1971); *In re Smythe*, 480 F. 2d 1376, 178 USPQ 279 (CCPA 1973).

As such, the §112 rejection, first paragraph of claims 19, 20, 22, 23, and 30 should be withdrawn.

3) Rejection of Claim 23

As set forth in MPEP 2171, the second paragraph of 35 U.S.C. §112 sets forth two separate requirements (A) the claims must set forth the subject matter that Applicant regards as their invention; and (B) the claims must particularly point out and distinctly define the metes and bounds of the subject matter that will be protected by the patent grant.

The first requirement is a subjective one because it is dependent on what the Applicant regards as their invention. The second requirement is an objective one because it is not dependent on the views of applicant or any particular individual, but is evaluated in the context of whether the claim is definite - i.e., whether the scope of the claim is clear to a hypothetical person possessing the ordinary level of skill in the pertinent art.

A seminal case on the construction of the second paragraph of § 112 is *In re Borkowski*, 422 F.2d 904, 164 U.S.P.Q. 642 (C.C.P.A. 1970), where the CCPA observed:

> The first sentence of the second paragraph of § 112 is essentially a requirement for *precision and definiteness* of claim language. If the scope of subject matter embraced by a claim is clear, and if the applicant has not otherwise indicated that he intends that claim to be of a different scope, then the claim does particularly point out and distinctly claim the subject matter which the applicant regards as his invention.

Id. at 909, 164 U.S.P.Q. at 645-46 (footnote omitted).

It is clear from the above-cited language of *Borkowski* that the second paragraph of § 112 contains two requirements:

- The first requirement calls for precision and definiteness. In other words, one skilled in the art must be able to tell with a reasonable degree of certainty whether his or her conduct is within or outside the scope of the claim. Simply stated, the claims must not be "vague or indefinite" and must clearly set out the boundaries of the subject matter for which protection is granted by the patent.
- The second requirement is that the claims must be directed to the subject matter that the applicant regards as his or her invention. This means not only that an applicant may claim whatever he or she regards as his or her invention, but also that an applicant may not claim subject matter that he or she does not regard as his or her invention.

Consequently, a claim that is understandable to one skilled in the art and that defines subject matter that applicant regards as the invention meets the requirements of 35 U.S.C. § 112, second paragraph. Stated another way, all that is required by the second paragraph of § 112 is that the claims set out and circumscribe a particular area that the applicant regards as the invention with a reasonable degree of precision and particularity.

Applicant respectfully incorporates the description above regarding the rejection of claim 23 under §112, first paragraph. Specifically, the subject invention involves to different arts, 1) motor vehicle composite damping elements and 2) bonding the flexible microcellular polyurethane elastomer layer to rigid thermoplastic polyurethane molding.

One of ordinary skill in the art of motor vehicle composite damping elements, as shown in Exhibit A, would understand that the inventors were in possession of damping elements that comprised complex structures to replace well-known rubber-metal damping elements. One of ordinary skill in the art of bonding the flexible microcellular polyurethane elastomer layer to rigid thermoplastic polyurethane molding would understand that the inventors were in possession of chemically bonding to any surface of the rigid thermoplastic polyurethane molding.

Moreover, Applicant has provided numerous examples of well-known motor vehicle damping elements, presented as Exhibit A, which an English equivalent was cited in specification as originally filed. Again, the inclusion of this reference was merely to illustrate numerous prior art damping elements having different orientations and configurations of the rigid metal and flexible rubber. The rubber is very clearly shown adhered to inner and outer surfaces of the rigid metal as would be understood by one of ordinary skill in the art of automotive damping elements. Thus, the inventors at the time of the invention were in possession of the flexible microcellular polyurethane elastomer layer being bonded to inner and outer surface of the rigid thermoplastic polyurethane molding.

The Examiner contends that the original specification lacks any disclosure of workable embodiments having a structural relationship which can be reasonably interpreted as a support for the elastomer bonded to the outer surface in claim 23. However, such an analysis is not appropriate for a §112, second paragraph rejection. The only reference in the MPEP to such an argument arises in the context of §112, first paragraph rejections. Since the Examiner has relied upon this standard in his §112, second paragraph rejections, Applicant sets forth the appropriate standard when used with §112, first paragraph rejections.

As set forth in MPEP 2164.02, compliance with the enablement requirement of 35 U.S.C. §112, first paragraph, does not turn on whether an example is disclosed. The specification need not contain an example if the invention is otherwise disclosed in such manner that one skilled in the art will be able to practice it without an undue amount of experimentation. In re Borkowski, 422 F.2d 904, 908, 164 USPQ 642, 645 (CCPA 1970).

In view of MPEP 2164.02, there is no necessity to provide workable embodiments and the Examiner in the context of the 112, second paragraph rejection improperly relies upon this.

Numerous examples are present in the specification as originally filed. Referring specifically to page 10, lines 25+ and Table 3, specimens were utilized to determine the strength of the bond of the microcellular polyurethane to the TPU. In fact, this example is commensurate in scope with the configuration of one of the prior damping elements described above on page 369 of Exhibit A having rubber contacting the inside of one metal part and contacting the outside of another metal part. Thus, the passage identified by the Examiner does not exclude the limitation of "elastomer layer is bonded to an outer surface of said molding" and in fact supports Applicant's arguments that such a limitation was described in sufficient detail that one skilled in the art could reasonably conclude that the inventor had possession of the claimed invention.

The Examiner concedes that the specification as originally filed has support for the TPU molding having an inner surface, which is also discussed above. For every TPU molding that has an inner surface, the TPU molding must also have an outer surface. A TPU molding could not exist as only an inner surface. Therefore, the TPU molding must also have an outer surface. If the TPU molding has both an inner surface and an outer surface, by placing the TPU molding in the mold, the flexible elastomer layer may be bonded to the outer surface of the molding.

In view of the above, it is submitted that the limitation "elastomer layer is bonded to an outer surface of said molding" is not vague and is definite and would be understood by one of ordinary skill in the art upon reading the specification. Therefore, the §112, second paragraph rejection of claim 23 should be withdrawn.

CLOSING

For the reasons set forth above, the rejections of claims 19, 20, 22, 23, and 30 must be reversed.

Respectfully submitted,

HOWARD & HOWARD ATTORNEYS, P.C.

December 5, 2008
Date

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CLAIMS APPENDIX

Claims 1-18 (Cancelled).

19. (Previously Presented) A motor vehicle composite damping element received in a transverse link, a longitudinal link, a triangular link, a rear-axle subframe, a stabilizer, a spring-strut support, or a shock-absorber of a motor vehicle, said composite damping element comprising:

i) a rigid thermoplastic polyurethane molding having a thickness of from 2 to 10 mm, and

ii) a flexible microcellular polyurethane elastomer layer chemically bonded to and in direct contact with at least one surface of said rigid thermoplastic polyurethane molding such that said microcellular polyurethane elastomer layer dampens and absorbs vibrations of the transverse link, the longitudinal link, the triangular link, the rear-axle subframe, the stabilizer, the spring-strut support, or the shock-absorber while supported by said rigid thermoplastic polyurethane molding.

20. (Previously Presented) The composite element of Claim 19 wherein said elastomer has a density of from 300 to 700 kg/m^3, a tensile strength to DIN 53571 of from 3 to 8 N/mm^2, an elongation at break to DIN 53571 of from 350 to 550%, a tear propagation resistance to DIN 53515 of from 8 to 30 N/mm, and a rebound resilience to DIN 53512 of from 50 to 60%.

Claim 21 (Cancelled).

22. (Previously Presented) The composite element of Claim 19 wherein said elastomer layer is bonded to an inner surface of said molding.

23. (Previously Presented) The composite element of Claim 19 wherein said elastomer layer is bonded to an outer surface of said molding.

Claims 24-29 (Cancelled).

30. (Previously presented) The composite element of Claim 19 wherein said thermoplastic polyurethane molding is formed from isocyanates and isocyanate reactive components in a ratio of isocyanate groups to isocyanate reactive groups of greater than 1.06:1 such that said excess isocyanate groups are available for chemically bonding with said microcellular polyurethane elastomer layer.

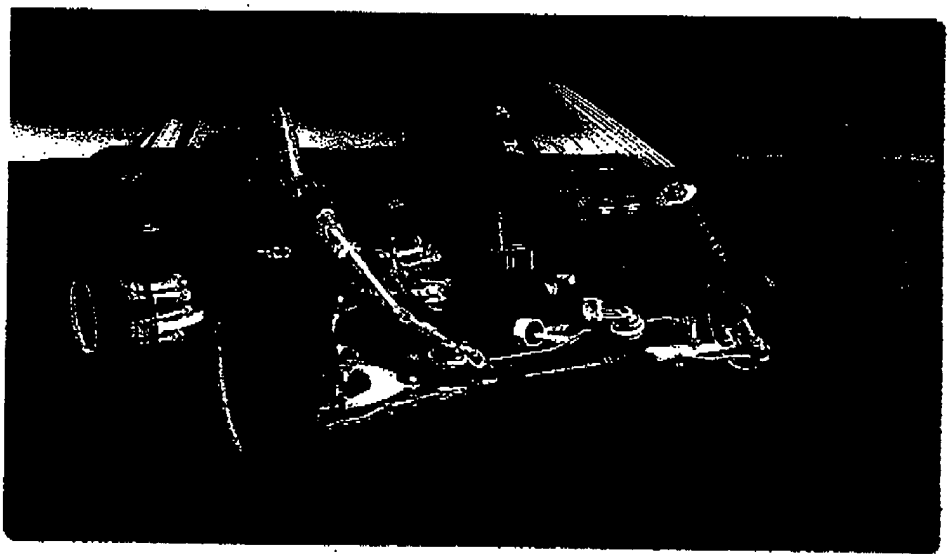
EVIDENCE APPENDIX

Exhibit A: Portions of an English version of "Fahrwerktechnik: Radaufhangungen", 2nd Edition, ed. Prof. Dipl. –Ing. Jornsen Reimpell, Vogel Buchverlag Wurzburg

EXHIBIT A

ENGINEERING PRINCIPLES SECOND EDITION

The Automotive Chassis



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The Automotive Chassis: Engineering Principles

SECOND EDITION

Chassis and vehicle overall
Wheel suspensions and types of drive
Axle kinematics and elastokinematics
Steering – Springing – Tyres
Construction and calculations advice

Prof. Dipl.-Ing. Jörnsen Reimpell
Dipl.-Ing. Helmut Stoll
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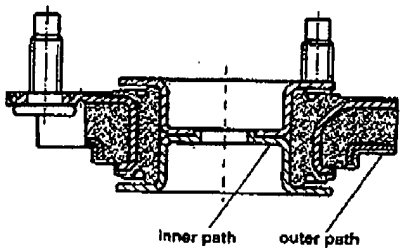

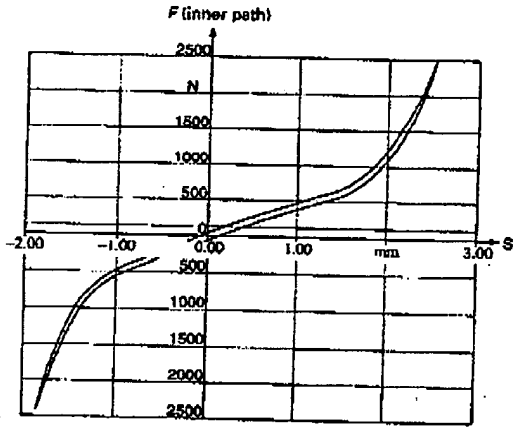

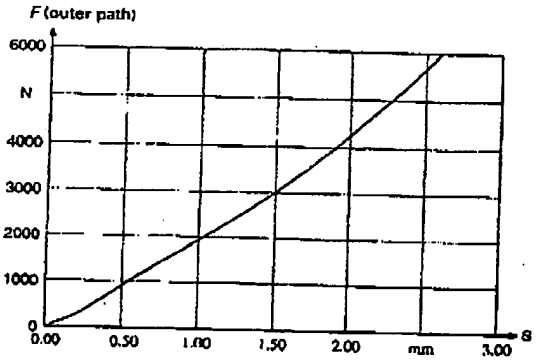

Fig. 1.10 The dual path top mount support of the Ford Focus (1998) manufactured by ContiTech Formteile GmbH. The body spring and shock-absorber forces are introduced into the body along two paths with variable rigidity. In this way, it is possible to design the shock-absorber bearing (inner element) in the region of small amplitudes with little rigidity and thus achieve good insulation from vibration and noise as well as improve the roll behaviour of the body. With larger forces of approximately 700 N and above, progression cams, which increase the rigidity of the bearing, come into play. A continuous transition between the two levels of rigidity is important for reasons of comfort. The bearing must have a high level of rigidity in a transverse direction in order to ensure that unwanted displacements and hence changes in wheel position do not occur. The forces of the body springs are directed along the outer path, which has a considerably higher level of rigidity.

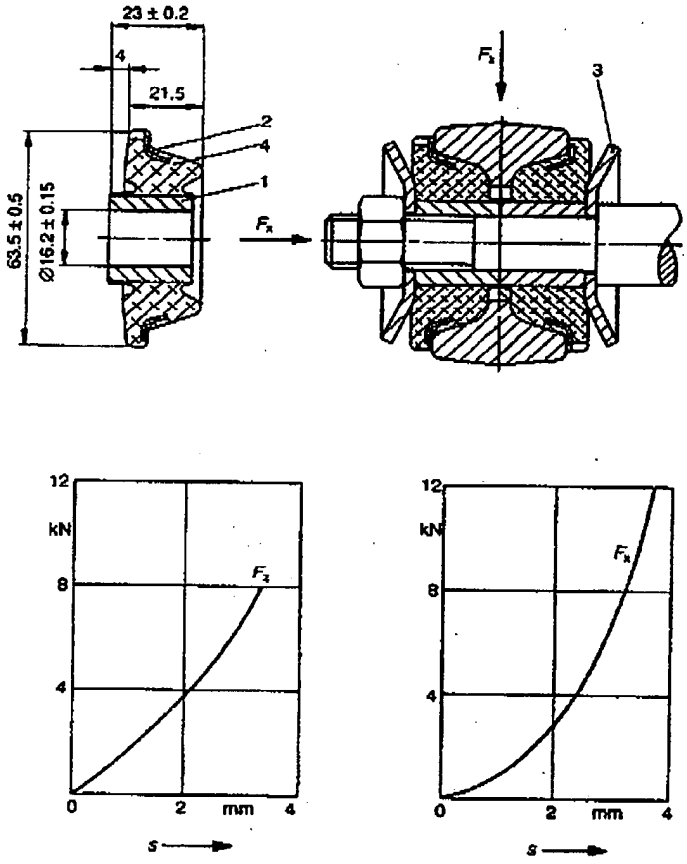

Fig. 3.85 Mounting of the anti-roll bar fitted at the front in the transverse links on the Audi 6 (built until 1996) (Fig. 1.57). The two rubber parts in the suspension control arms are vulcanized to the inner tube 1 and ring 2. Under the influence of longitudinal forces F_x one part comes into contact at the dome-shaped washer 3 and the other part relaxes. As can be seen on the left, the rubber part 4 projects beyond the sleeve 1; when fitted this achieves the necessary pre-tensioning. Ring 2 ensures that it sits firmly in the suspension control arm, so that the mounting can transmit vertical forces F_z without complying too much. The diagrams show the longitudinally progressive characteristic curve and the almost vertical linear characteristic curve of both bearings when fitted (illustration: Lemförder Fahrwerktechnik).

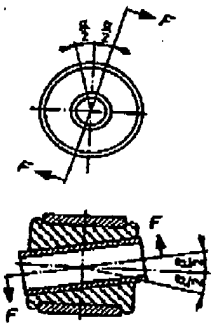

Fig. 5.45 The eye-type joint has 35 mm to 36 mm outside diameter, a hole of $10^{+0.15}$ mm or $12^{+0.15}$ mm and is 32 mm wide. The maximum approved distortion angles are $\alpha/2 = \pm 15°$ and the cardan (conical) angles $\beta/2 = \pm 4°$.

distortion, when the vehicle is running, and premature shock absorber wear be avoided.

5.6.7.2 Eye-type joints

The requirements are best met by rubber joints. Figure 5.47 shows, on the top and bottom of the damper, the type of suspension most used: the eye-type joint, sometimes also known as a ring joint. The most common size in passenger cars is 32 mm wide, 35 mm to 36 mm diameter and has a 10 mm or 12 mm fixing hole with a +0.15 mm tolerance (Fig. 5.45). If compression stops are housed in the shock absorber or if spring forces are also concentrated in the mountings, 40–60 mm wide joints may be necessary (Fig. 5.29).

The joint itself consists of a rubber bush that is in high radial pre-tension between the outermost ring and the pressed-in inner tube. The rubber part has beads at both sides as a measure to stop it sliding out when the vehicle is moving. The size mostly used and shown in the illustration allows twisting angles up to $\alpha/2 = \pm 15°$ and cardan (conical) deviations of up to $\beta/2 = \pm 4°$. Greater twist angles would increase the bending moment in the piston rod and therefore need different configurations (Fig. 5.31 and Section 5.2 in Ref. [5]).

5.6.7.3 Pin-type joints

If the same angle movement occurs in all planes at the upper or lower suspension when the vehicle moves, the design solution is to use a pin-type joint (Figs 5.46 and 5.40). This allows deviations up to ±6° in all directions and consists of two rubber snubbers, one above and one below the fixing point; the snubbers can be separated or manufactured in one piece as a 'knob snubber'. The guide pin usually has a cold-formed 10 mm diameter and an M 10 × 1 thread at the end. The rubber parts are pre-tensioned via a dished washer and (as shown in the figures) using a self-locking nut or two lock nuts. The distance between the lower edge of washer and the damper, which is important for the function, can be achieved using a loose spacer tube (usually of 2 mm wall thickness, i.e. 14 mm outside diameter) or by means of a rolled-in tube, as shown in Fig. 5.31.

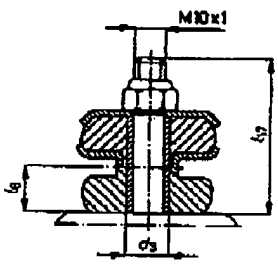

Fig. 5.48 On a pin-type joint, the preload on the rubber parts should be ensured by a spacer tube. Usually this has a wall thickness of 2 mm and 14 mm outside diameter. To avoid contact in the location hole, the upper snubber can be centred by a washer. A self-locking nut is frequently used for clamping the parts together (illustration: Sachs).

From a design perspective, it must be ensured that even at its greatest compression and twist, the side of the pin or the spacer does not come into contact with the bodywork or axle; this would lead to unpleasant noises and increased bending stress. As shown in Fig. 5.46 on the upper snubber, contact can be avoided by the use of a washer, the outer collar of which surrounds the rubber part and grips into the hole with an edge that is turned downwards. In the case of the lower snubber, the same effect is achieved by a vulcanized collar. The fixing point itself can also be designed as a 'shim'.

5.6.8 Stops and supplementary springs

Installation of any end-stops means both the damper and the suspension strut increase in length and there must be enough space in the vehicle to allow this.

5.6.8.1 Jounce stop

Figure 5.43 shows the maximum jounce force 1.45 kN at $v_{D,max} = 0.52$ m s^{-1}. However, piston speeds of 3 m s^{-1} can occur, which lead to higher forces. If these forces can no longer be absorbed hydraulically in the shock absorber valves, jounce stops come into action (Fig. 5.9). On passenger cars and light commercial vehicles, the most economic solution is to locate the elastic limitation of the jounce travel or the 'hydraulic stop' in the damper (see also Sections 5.3 and 8.3.1 in Ref. [5]).

The other advantage is that the slight springing effect of the top and bottom damper mountings can be additionally used to damp the jouncing wheel, and so a relatively flat, more easily manufactured bumper 5 made of rubber, polyurethane or Viton, polyamide or a similar plastic is completely adequate (Figs 5.47 and 5.26). All that is needed to fit this is a groove turned into the piston rod in which the collar on the stop disc 4 is rolled or a lock washer inserted.

In the twin-tube system, when the piston rod is extended, the snubber 5 comes into contact with the piston rod guide 6 which is smooth at the bottom (Fig. 5.47), or into contact with a disc 8 protecting the set of gaskets on monotube dampers (Fig. 5.32). Figure 5.48 shows the shapes and the progressive springing curve of the 4–12 mm high snubbers.

RELATED PROCEEDINGS APPENDIX

NONE